

ABSTRACT OF THE DISCLOSURE

In a Raman amplifier using three or more pumping wavelengths, when the pumping wavelengths are divided into a short wavelength side group and a long wavelength side group at the boundary of the pumping wavelength having the longest interval between the adjacent wavelengths, the short wavelength side group includes two or more pumping wavelengths having intervals therebetween which are substantially equidistant, and the long wavelength side group is constituted by two or less pumping wavelengths. When a certain pumping wavelength is defined as a first channel and pumping wavelengths which are spaced apart from each other by about 1 THz from the certain pumping wavelength toward a long wavelength side are defined as second to n-th channels, respectively, pump lights having wavelengths corresponding to the first to n-th channels are multiplexed, and pump light having a wavelength spaced apart from the n-th channel by 2 THz or more toward the long wavelength side is further multiplexed with the said multiplexed pump light, and resultant pump light is used as pump source. Pump lights of all of the wavelengths corresponding to the channels other than (n-1)th and (n-2)th channels are multiplexed with each other, and resultant pump light is used as pump source. Pump lights of all of the wavelengths corresponding to the channels other than (n-2)th and (n-3)th channels are multiplexed with each other, and resultant pump light is used as pump source.